Test Report
Binder Content and Mix Gradation

Project Name	Improvements of roads for layout where the Cauvery and UGD works are in progress in Ward No.05 and Ward No.06 Byatarayanapura Sub Division
Client	Executive Engineer Project Yellahanka Division
Job No	MCTPL/BBMP/Project Division Yelahanka ZONE /P-7/1/2017-2018
Mix Type	Bituminous Concrete (BC)
Contractor	Sri. R. Satheesh
Test Method	Specification for Road & Bridge Works, MORT&H, Revision V.
Location	Bay
Material	Bituminous Concrete mix
Sample No	4
Date	12-Apr-2018

Sl. No.	Description	Unit	Computation	Test Result
1	Weight of Empty bowl before Extraction (E)	gm	Eb	1080
2	Weight of bowl + Sample before extraction (w_s)	gm	w_{sb}	1840
3	Weight of Sample taken for the test (S_b)	gm	$S_b = w_{sb} - Eb$	760
4	Weight of bowl + Sample after extraction (w_a)	gm	w_{sa}	1797
5	Weight of Sample after extraction (i.e. washed aggregates) (S_a)	gm	$S_a = w_{sa} - Eb$	717
6	Weight of Filter paper before extraction (F_b)	gm	F_b	2
7	Weight of Filter paper after extraction (F_a)	gm	F_a	4
8	Weight of filler on filter paper (F_d)	gm	$F_d = F_b - F_a$	2
9	Weight of Bitumen without considering Filter paper (W_b)	gm	W_b	43
10	Weight of the Bitumen with considering Filter paper (W_a)	gm	$W_a = w_b - F_d$	41
11	Percentage of the Bitumen (i.e. Binder Content) ($\%_b$)	(%)	$W_a / SbX100$	5.39

Sl. No.	I.S. Sieve size (mm)	Weight Retained (gm)	Percentage of weight Retained (%)	Cumulative Percentage of weight retained (%)	Cumulative % of Passing		Remarks
					Test Result	Gradation Limits as per MORT&H	
1	19.00	0.00	0.00	0.00	100.00	100.00	Gradation satisfies the MORT&H Grade II Specification for Bituminous Concrete
2	13.20	679.00	16.98	16.98	83.03	72-100	
3	9.50	438.00	10.95	27.93	72.08	70-88	
4	4.75	237.00	5.93	33.85	66.15	53-71	
5	2.36	482.00	12.05	45.90	54.10	42-58	
6	1.18	348.00	8.70	54.60	45.40	34-48	
7	0.60	442.00	11.05	65.65	34.35	26-38	
8	0.30	434.00	10.85	76.50	23.50	18-28	
9	0.15	387.00	9.68	86.18	13.83	12-20)	
10	0.08	368.00	9.20	95.38	4.63	(4-10)	

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Asst. Executive Engineer
Project Division
Yelahanka Zone
Bangalore

Test Report

Binder Content and Mix Gradation

Project Name	Improvements of roads for layout where the Cauvery and UGD works are in progress in Ward No.05 and Ward No.06 Byatarayanapura Sub Division
Client	Executive Engineer Project Yellahanka Division
Job No	MCTPL/BBMP/Project Division Yelahanka ZONE /P-7/1/2017-2018
Mix Type	Bituminous Concrete (BC)
Contractor	Sri. R. Satheesh
Test Method	Specification for Road & Bridge Works, MORT&H, Revision V.
Location	Bay
Material	Bituminous Concrete mix
Sample No	5
Date	13-Apr-2018

Sl. No.	Description	Unit	Computation	Test Result
1	Weight of Empty bowl before Extraction (E)	gm	Eb	1080
2	Weight of bowl + Sample before extraction (w_s)	gm	w_{sb}	1845
3	Weight of Sample taken for the test (S_b)	gm	$S_b = w_{sb} - Eb$	765
4	Weight of bowl + Sample after extraction (w_s)	gm	w_{sa}	1810
5	Weight of Sample after extraction (i.e. washed aggregates) (S_a)	gm	$S_a = w_{sa} - Eb$	730
6	Weight of Filter paper before extraction (F_b)	gm	F_b	2
7	Weight of Filter paper after extraction (F_a)	gm	F_a	4
8	Weight of filler on filter paper (F_d)	gm	$F_d = F_b - F_a$	2
9	Weight of Bitumen without considering Filter paper (W_b)	gm	W_b	42
10	Weight of the Bitumen with considering Filter paper (W_a)	gm	$W_a = w_b - F_d$	40
11	Percentage of the Bitumen (i.e. Binder Content) ($\%_b$)	(%)	$W_a / SbX100$	5.23

Sl. No.	I.S. Sieve size (mm)	Weight Retained (gm)	Percentage of weight Retained (%)	Cumulative Percentage of weight retained (%)	Cumulative % of Passing		Remarks
					Test Result	Gradation Limits as per MORT&H	
1	19.00	0.00	0.00	0.00	100.00	100.00	Gradation satisfies the MORT&H Grade II Specification for Bituminous Concrete
2	13.20	676.00	16.90	16.90	83.10	72-100	
3	9.50	435.00	10.88	27.78	72.23	70-88	
4	4.75	234.00	5.85	33.63	66.38	53-71	
5	2.36	479.00	11.98	45.60	54.40	42-58	
6	1.18	345.00	8.63	54.23	45.78	34-48	
7	0.60	439.00	10.98	65.20	34.80	26-38	
8	0.30	431.00	10.78	75.98	24.03	18-28	
9	0.15	384.00	9.60	85.58	14.43	12-20)	
10	0.08	365.00	9.13	94.70	5.30	(4-10)	

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Bangalore

Test Report

Binder Content and Mix Gradation

Project Name	Improvements of roads for layout where the Cauvery and UGD works are in progress in Ward No.05 and Ward No.06 Byatarayanapura Sub Division
Client	Executive Engineer Project Yellahanka Division
Job No	MCTPL/BBMP/Project Division Yelahanka ZONE /P-7/1/2017-2018
Mix Type	Bituminous Concrete (BC)
Contractor	Sri. R. Satheesh
Test Method	Specification for Road & Bridge Works, MORT&H, Revision V.
Location	Bay
Material	Bituminous Concrete mix
Sample No	6
Date	13-Apr-2018

Sl. No.	Description	Unit	Computation	Test Result
1	Weight of Empty bowl before Extraction (E)	gm	Eb	1080
2	Weight of bowl + Sample before extraction (w_s)	gm	w_{sb}	1850
3	Weight of Sample taken for the test (S_b)	gm	$S_b = w_{sb} - Eb$	770
4	Weight of bowl + Sample after extraction (w_s)	gm	w_{sa}	1816
5	Weight of Sample after extraction (i.e. washed aggregates) (S_a)	gm	$S_a = w_{sa} - Eb$	736
6	Weight of Filter paper before extraction (F_b)	gm	F_b	2
7	Weight of Filter paper after extraction (F_a)	gm	F_a	4
8	Weight of filler on filter paper (F_d)	gm	$F_d = F_b - F_a$	2
9	Weight of Bitumen without considering Filter paper (W_b)	gm	W_b	43
10	Weight of the Bitumen with considering Filter paper (W_a)	gm	$W_a = w_b - F_d$	41
11	Percentage of the Bitumen (i.e. Binder Content) ($\%_B$)	(%)	W_a/ SbX100	5.32

Sl. No.	I.S. Sieve size (mm)	Weight Retained (gm)	Percentage of weight Retained (%)	Cumulative Percentage of weight retained (%)	Cumulative % of Passing		Remarks
					Test Result	Gradation Limits as per MORT&H	
1	19.00	0.00	0.00	0.00	100.00	100.00	Gradation satisfies the MORT&H Grade II Specification for Bituminous Concrete
2	13.20	671.00	16.78	16.78	83.23	72-100	
3	9.50	430.00	10.75	27.53	72.48	70-88	
4	4.75	229.00	5.73	33.25	66.75	53-71	
5	2.36	474.00	11.85	45.10	54.90	42-58	
6	1.18	340.00	8.50	53.60	46.40	34-48	
7	0.60	434.00	10.85	64.45	35.55	26-38	
8	0.30	426.00	10.65	75.10	24.90	18-28	
9	0.15	379.00	9.48	84.58	15.43	12-20)	
10	0.08	360.00	9.00	93.58	6.43	(4-10)	

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Test Report
Binder Content and Mix Gradation

Project Name	Improvements of roads for layout where the Cauvery and UGD works are in progress in Ward No.05 and Ward No.06 Byatarayanapura Sub Division
Client	Executive Engineer Project Yellahanka Division
Job No	MCTPL/BBMP/Project Division Yelahanka ZONE /P-7/1/2017-2018
Mix Type	Bituminous Concrete (BC)
Contractor	Sri. R. Satheesh
Test Method	Specification for Road & Bridge Works, MORT&H, Revision V.
Location	Bay
Material	Bituminous Concrete mix
Sample No	7
Date	15-Apr-2018

Sl. No.	Description	Unit	Computation	Test Result
1	Weight of Empty bowl before Extraction (E)	gm	Eb	1080
2	Weight of bowl + Sample before extraction (w_s)	gm	w_{sb}	1830
3	Weight of Sample taken for the test (S_b)	gm	$S_b = w_{sb} - Eb$	750
4	Weight of bowl + Sample after extraction (w_a)	gm	w_{sa}	1797
5	Weight of Sample after extraction (i.e. washed aggregates) (S_a)	gm	$S_a = w_{sa} - Eb$	717
6	Weight of Filter paper before extraction (F_b)	gm	F_b	2
7	Weight of Filter paper after extraction (F_a)	gm	F_a	4
8	Weight of filler on filter paper (F_d)	gm	$F_d = F_b - F_a$	2
9	Weight of Bitumen without considering Filter paper (W_b)	gm	W_b	42
10	Weight of the Bitumen with considering Filter paper (W_a)	gm	$W_a = w_b - F_d$	40
11	Percentage of the Bitumen (i.e. Binder Content) ($\%_B$)	(%)	$W_a / SbX100$	5.33

Sl. No.	I.S. Sieve size (mm)	Weight Retained (gm)	Percentage of weight Retained (%)	Cumulative Percentage of weight retained (%)	Cumulative % of Passing		Remarks
					Test Result	Gradation Limits as per MORT&H	
1	19.00	0.00	0.00	0.00	100.00	100.00	Gradation satisfies the MORT&H Grade II Specificati on for Bituminous Concrete
2	13.20	673.00	16.83	16.83	83.18	72-100	
3	9.50	432.00	10.80	27.63	72.38	70-88	
4	4.75	231.00	5.78	33.40	66.60	53-71	
5	2.36	476.00	11.90	45.30	54.70	42-58	
6	1.18	342.00	8.55	53.85	46.15	34-48	
7	0.60	436.00	10.90	64.75	35.25	26-38	
8	0.30	428.00	10.70	75.45	24.55	18-28	
9	0.15	381.00	9.53	84.98	15.03	12-20)	
10	0.08	362.00	9.05	94.03	5.97	(4-10)	

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Test Report
Rate of Spread of Prime Coat

Project Name	Improvements of roads for layout where the Cauvery and UGD works are in progress in Ward No.05 and Ward No.06 Byatarayanapura Sub Division
Client	Executive Engineer Project Yellahanka Division
Job No	MCTPL/BBMP/Project Division Yelahanka ZONE /P-7/1/2017-2018
Mix Type	Wet Mix Macadam
Contractor	Sri. R. Satheesh
Location	At Site
Material	Bitumen
Sample No	1
Date	28-Mar-2018

Sl. No.	Determination	Unit	Test No 1		
			Longitudinal Distribution		
1	Size of Plate (mxn)	m^2	0.2x0.2	0.2x0.2	0.2x0.2
2	Area of the Plate (a)	m^2	0.04	0.04	0.04
3	Initial weight of the empty Plate (b)	kg	1.641	1.641	1.641
4	Final weight of plate after application of Tack Coat (c)	kg	1.695	1.652	1.653
5	Weight of Prime coat/ Tack Coat (d = c-b)	kg	0.054	0.011	0.012
6	Rate of spread (d/a)	kg / m^2	1.350	0.275	0.300
7	Average	kg / m^2	0.642		
8	Specified Limit	kg / m^2	Not less than 0.6 kg / m^2		

Results: Rate of Spread of Prime Coat / Tack Coat is: 0.642 kg / m2

Note:

i. The results indicated above are based on the tests carried out on the sample at site.

ii. The results relate only to the items tested.

iii. This test report should not be reproduced except in full, without written approval of this laboratory.

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Test Report
Rate of Spread of Prime Coat

Project Name	Improvements of roads for layout where the Cauvery and UGD works are in progress in Ward No.05 and Ward No.06 Byatarayanapura Sub Division
Client	Executive Engineer Project Yellahanka Division
Job No	MCTPL/BBMP/Project Division Yelahanka ZONE /P-7/1/2017-2018
Mix Type	Wet Mix Macadam
Contractor	Sri. R. Satheesh
Location	At Site
Material	Bitumen
Sample No	2
Date	28-Mar-2018

Sl. No.	Determination	Unit	Test No 1		
			Longitudinal Distribution		
1	Size of Plate (mxn)	m^2	0.2x0.2	0.2x0.2	0.2x0.2
2	Area of the Plate (a)	m^2	0.04	0.04	0.04
3	Initial weight of the empty Plate (b)	kg	1.641	1.641	1.641
4	Final weight of plate after application of Tack Coat (c)	kg	1.694	1.651	1.652
5	Weight of Prime coat/ Tack Coat (d = c-b)	kg	0.053	0.01	0.011
6	Rate of spread (d/a)	kg / m^2	1.325	0.25	0.275
7	Average	kg / m^2	0.617		
8	Specified Limit	kg / m^2	Not less than 0.6 kg / m^2		

Results: Rate of Spread of Prime Coat / Tack Coat is: 0.617 kg / m2

Note:

i. The results indicated above are based on the tests carried out on the sample at site.

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Test Report
Rate of Spread of Prime Coat

Project Name	Improvements of roads for layout where the Cauvery and UGD works are in progress in Ward No.05 and Ward No.06 Byatarayanapura Sub Division
Client	Executive Engineer Project Yellahanka Division
Job No	MCTPL/BBMP/Project Division Yelahanka ZONE /P-7/1/2017-2018
Mix Type	Wet Mix Macadam
Contractor	Sri. R. Satheesh
Location	At Site
Material	Bitumen
Sample No	3
Date	28-Mar-2018

Sl. No.	Determination	Unit	Test No 1		
			Longitudinal Distribution		
1	Size of Plate (mxn)	m^2	0.2x0.2	0.2x0.2	0.2x0.2
2	Area of the Plate (a)	m^2	0.04	0.04	0.04
3	Initial weight of the empty Plate (b)	kg	1.641	1.641	1.641
4	Final weight of plate after application of Tack Coat (c)	kg	1.694	1.652	1.653
5	Weight of Prime coat/ Tack Coat (d = c-b)	kg	0.053	0.011	0.012
6	Rate of spread (d/a)	kg / m^2	1.325	0.275	0.3
7	Average	kg / m^2	0.650		
8	Specified Limit	kg / m^2	Not less than 0.6 kg / m^2		

Results: Rate of Spread of Prime Coat / Tack Coat is: 0.650 kg / m2

Note:

i. The results indicated above are based on the tests carried out on the sample at site.

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Test Report

Rate of Spread of Prime Coat

Project Name	Improvements of roads for layout where the Cauvery and UGD works are in progress in Ward No.05 and Ward No.06 Byatarayanapura Sub Division
Client	Executive Engineer Project Yellahanka Division
Job No	MCTPL/BBMP/Project Division Yelahanka ZONE /P-7/1/2017-2018
Mix Type	Wet Mix Macadam
Contractor	Sri. R. Satheesh
Location	At Site
Material	Bitumen
Sample No	4
Date	29-Mar-2018

Sl. No.	Determination	Unit	Test No 1		
			Longitudinal Distribution		
1	Size of Plate (mxn)	m^2	0.2x0.2	0.2x0.2	0.2x0.2
2	Area of the Plate (a)	m^2	0.04	0.04	0.04
3	Initial weight of the empty Plate (b)	kg	1.641	1.641	1.641
4	Final weight of plate after application of Tack Coat (c)	kg	1.695	1.652	1.651
5	Weight of Prime coat/ Tack Coat (d = c-b)	kg	0.054	0.011	0.01
6	Rate of spread (d/a)	kg / m^2	1.350	0.275	0.250
7	Average	kg / m^2	0.625		
8	Specified Limit	kg / m^2	Not less than 0.6 kg / m^2		

Results: Rate of Spread of Prime Coat / Tack Coat is: 0.625 kg / m2

Note:

i. The results indicated above are based on the tests carried out on the sample at site.

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Asst. Executive Engineer
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Yelahanka Zone
Bangalore

Test Report
Rate of Spread of Prime Coat

Project Name	Improvements of roads for layout where the Cauvery and UGD works are in progress in Ward No.05 and Ward No.06 Byatarayanapura Sub Division
Client	Executive Engineer Project Yellahanka Division
Job No	MCTPL/BBMP/Project Division Yelahanka ZONE /P-7/1/2017-2018
Mix Type	Wet Mix Macadam
Contractor	Sri. R. Satheesh
Location	At Site
Material	Bitumen
Sample No	5
Date	29-Mar-2018

Sl. No.	Determination	Unit	Test No 1		
			Longitudinal Distribution		
1	Size of Plate (mxn)	m^2	0.2x0.2	0.2x0.2	0.2x0.2
2	Area of the Plate (a)	m^2	0.04	0.04	0.04
3	Initial weight of the empty Plate (b)	kg	1.641	1.641	1.641
4	Final weight of plate after application of Tack Coat (c)	kg	1.693	1.654	1.655
5	Weight of Prime coat/ Tack Coat (d = c-b)	kg	0.052	0.013	0.014
6	Rate of spread (d/a)	kg / m^2	1.300	0.325	0.350
7	Average	kg / m^2	0.658		
8	Specified Limit	kg / m^2	Not less than 0.6 kg / m^2		

Results: Rate of Spread of Prime Coat / Tack Coat is: 0.658 kg / m2

Note:

i. The results indicated above are based on the tests carried out on the sample at site.

ii. The results relate only to the items tested.

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Bangalore

Test Report
Rate of Spread of Prime Coat

Project Name	Improvements of roads for layout where the Cauvery and UGD works are in progress in Ward No.05 and Ward No.06 Byatarayanapura Sub Division
Client	Executive Engineer Project Yellahanka Division
Job No	MCTPL/BBMP/Project Division Yelahanka ZONE /P-7/1/2017-2018
Mix Type	Wet Mix Macadam
Contractor	Sri. R. Satheesh
Location	At Site
Material	Bitumen
Sample No	6
Date	29-Mar-2018

Sl. No.	Determination	Unit	Test No 1		
			Longitudinal Distribution		
1	Size of Plate (mxn)	m^2	0.2x0.2	0.2x0.2	0.2x0.2
2	Area of the Plate (a)	m^2	0.04	0.04	0.04
3	Initial weight of the empty Plate (b)	kg	1.641	1.641	1.641
4	Final weight of plate after application of Tack Coat (c)	kg	1.696	1.653	1.65
5	Weight of Prime coat/ Tack Coat (d = c-b)	kg	0.055	0.012	0.009
6	Rate of spread (d/a)	kg / m^2	1.375	0.3	0.225
7	Average	kg / m^2	0.633		
8	Specified Limit	kg / m^2	Not less than 0.6 kg / m^2		

Results: Rate of Spread of Prime Coat / Tack Coat is: 0.633 kg / m2

Note:

i. The results indicated above are based on the tests carried out on the sample at site.

ii. The results relate only to the items tested.

iii. This test report should not be reproduced except in full, without written approval of this laboratory.

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